

# Plants of Concern, a citizen science monitoring program in Chicago Wilderness since 2001



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## Plants of Concern



CHICAGO  
BOTANIC  
GARDEN

### Plants of Concern (POC), initiated in 2001, is coordinated through the Chicago Botanic Garden.

POC monitors rare, endangered, and threatened species in the Chicago Region using standardized protocols. It is a collaboration of public and non-governmental conservation agencies, private landowners, and citizen scientists, and is guided by an advisory group of land managers, scientists and volunteers. The program's success is largely due to dedicated, consistent, and accurate data collection by citizen scientists and stewards. Data are analyzed for population trends using plant counts (actual or estimated) and spatial dimensions as measures of change. Results are reported to state agencies and land managers and may alert them of potential threats to populations, reinforce beneficial practices, and aid in creating management plans.



Figure 1. Distribution of monitored populations



Citizen scientists monitor populations once annually at peak flowering time and collect data on: number of plants, percent reproductive, population dimensions, GPS location, native associate plants, degree of impact of invasive species and other threats, and management conducted within monitored population areas. These data are reviewed by POC and land managers to ensure accuracy.

Figure 2. Plants of Concern's accomplishments over the last decade. Cumulative totals for each category are shown in parentheses.

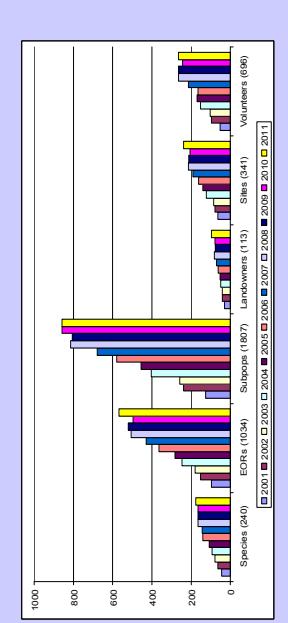
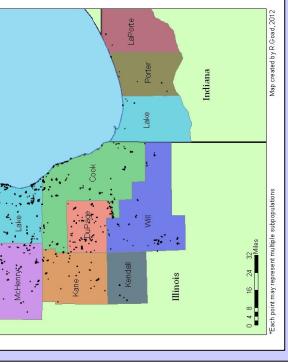


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More information can be found at our website:  
[www.plantsofconcern.org](http://www.plantsofconcern.org)

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Figure 3. Average and standard error of plant counts with differing management regimes. Analyses used logged counts to improve normality. Stars indicate significant differences ( $\alpha=0.05$ )

Figure 4. Encroachment of brush and trees as reported for subpopulations that were also recorded as managed with burning or brush clearing.

### Cypripedium candidum Willd. (Orchidaceae) White Lady's Slipper

A long-lived perennial with distinctive white, inflated lip; grows from fibrous roots in single or often colonial multiple stems. Threatened in Illinois by reduced habitat availability and fragmentation, limited pollinator-based reproduction, poaching, and competition with invasive species. Can remain dormant for up to six years (Shefferson 2006) and take 12 or more years to go from seed to mature plant (Bowles 1983, Curtis 1946).



Photo by K. Gamble

### What we are learning about *C. candidum*

Connecting trends in plant counts, threats, and management has always been a goal of POC. Analysis of data for *Cypripedium candidum*, one of the most monitored species in the program, may serve as a model for analyses with other species.

#### Higher counts in managed subpopulations

We analyzed 53 subpopulations with 5 or more years of data. Of these, 70% are increasing in number over time, and 70% are reported as managed. For this analysis, we used a mixed model with year as a random effect.

Populations reported as burned and cleared of brush tended to have more individuals than unmanaged populations (Figure 3).

#### Management affects woody encroachment

We analyzed 425 reports from 112 subpopulations using a chi-squared test. Each report details occurrence of burning or brush removal within the past year, and the extent of brush and tree encroachment for a subpopulation.

Burning and/or brush removal have a dependent effect on tree encroachment within monitored subpopulations, but brush encroachment is not dependent on management activities (Figure 4).

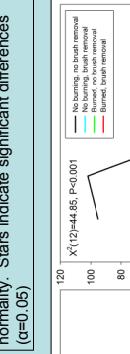
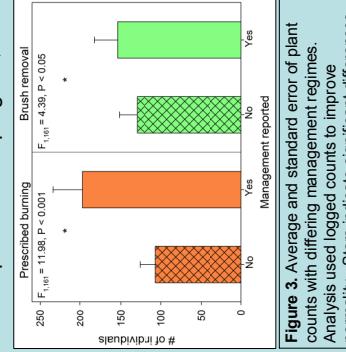


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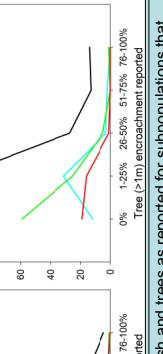


Figure 4. Encroachment of brush and trees as reported for subpopulations that were also recorded as managed with burning or brush clearing.

### Acknowledgements

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Gaylord & Dorothy Donnelley Foundation.

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